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SCHEDULE OF MEETINGS

10 January	**Executive Board, Standing Committee on Administration and Finance, Geneva**
18 January	**Executive Board, fifteenth session, Geneva**
17-23 February	**Study Group on the Psychobiological Development of the Child, third meeting, Geneva**
21-26 February	**International Conference for the Seventh Revision of the International Lists of Diseases and Causes of Death, Paris**

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A HUMAN APPROACH

Address by Prime Minister Nehru to Regional Committee for South-East Asia

The inaugural address of Prime Minister Jawaharlal Nehru to the seventh session of the WHO Regional Committee for South-East Asia (New Delhi, 21 September 1954) is of more than regional interest. The text below is a slightly abridged version of this address.

. . . We live in days when there is a great deal of disturbance in the mental apparatus of humanity. Even though your Organization may not touch upon these matters directly, I imagine that the kind of work WHO is doing must have a considerable effect on the disturbed state of the world's mental health. We are faced with many problems which do not easily yield to satisfactory solution. In the realm of politics, specifically, one finds attempts being made to solve these problems by what might be called the direct approach. One goes along head foremost in the effort to solve them, usually coming across somebody else's head which is bent on solving the problems in the opposite direction. Then the two heads come into conflict.

It may be that it is easier to consider and to solve this kind of problems in a rather indirect way with indirect approaches. The indirect approach sometimes reaches the desired objectives much sooner than what I have called the direct approach because it undermines and goes around the defences of the opposition which it may have to meet. It takes them almost unawares, while the direct, aggressive approach often leads to direct, aggressive defence, and conflict occurs.

I mention this because the activities of some of the important organs of the United Nations, like WHO and UNESCO or others, would appear to be some distance removed from the political conflicts of the world. In these activities it is possible to adopt an approach which does not bring about active opposition and conflict. You use the direct approach, of course, in dealing directly with health problems. This is certainly the correct approach. But it also becomes the indirect approach in dealing with world problems of another kind—the mental conflicts, the political events—because it can produce an atmosphere which soothes and which enables people at least to talk to each other in a quiet and dispassionate way. Therefore, quite apart from the good work that these agencies are doing directly, there is the indirect aspect of their work which can help create an atmosphere favourable to the solution of our daily problems in the political sphere.

The direct work that you do in regard to health is particularly needed and welcome in the countries of this region from which you as representatives have come together today. In health matters these countries are rather backward, and the more we can to do improve

health and sanitation, the better. There are, of course, many different aspects of this work.... But the one aspect which seems to me to have greater importance than any other is work that concerns children. I think that first priority should always be given to children—to the young people who are building for the future. They are the essential "human material" which has to be looked after first and above all else. I do not mean to say that you should ignore others; but, after all, it is easier to deal with children than with those who are confirmed in their habits and their ways. And our children are our tomorrow.

For this reason I hope that in all these countries, whether from the point of view of health or other similar points of view, the children will always be considered first, and that provision will be made for their proper growth, adequate opportunities being given them to live in an environment suited to the development of their full powers and creativity. Nothing is so sad for me as to see little children not looked after and not cared for, not having the basic needs met which should be fulfilled for every child—quite apart from the loving care that a child deserves. If we can provide even some background for raising levels of child welfare—not merely by putting up more clinics and hospitals, but in a wider sense by creating a better environment for children to grow up in—then it will be a very great thing indeed that we have accomplished.

In many of the countries that you represent ... populations are large and growing larger every year. Some people are greatly alarmed at the rate of population growth in the countries of South-East Asia. I myself do not like it. I should like this rapid growth to be checked. But I am not alarmed about it, and I see no reason, as some people do, to consider that the end of the world is coming because some populations are getting bigger and bigger.

I think we should take a balanced view of these matters. While certainly working to check the growth of the population in the best ways that we can devise, we should nevertheless not get cold feet and draw up imaginative statistics of what the world's population may be in 20 or 30 or 50 years from now....

Of course, the fact remains that the population problem is an important problem and should be dealt with. Efforts must certainly be made to control it. Even though the growth of the population may not lead to any such grave crisis, it undoubtedly results in a lowering of standards. Moreover, we cannot raise standards of living very much if the population goes on increasing at a rate so rapid that economic gains are offset by it. We have not only to catch up with it in raising the standards of our peoples and come to what we consider a normal economic level, but we must also meet the rise of the population which tends to pull that level down.

One has to deal with the population problem in this way and make people appreciate the need for seeing it in these terms. Many persons who discuss this question talk about it either theoretically and academically or heatedly, bringing into the argument their own particular prejudices and their own special outlooks. Neither approach is very helpful because, in this matter—as, indeed, in all such matters—one has to do with human beings. It amazes me how often we forget the human being in our statistical conferences. We think in terms of blocks and curves or other such figures, forgetting that all these things represent individual men, women, and children not very different from any of us.

I should like therefore, when I talk about the human approach to the population problem, to stress the need to remember that it is human beings we have to deal with. They are not blocks, they are not some mechanical gadgets that you can play about with and order about. Not even the most authoritarian State can get very far in this way. It may go some distance

towards teaching people how to act as regimented human beings, but not even in this can it go very far. Much less can such things be done by the State which is not authoritarian.

We have to treat people as individual human beings who must be convinced, who must be made to understand and must be won over to any cause we seek to further. Also, since it is in this way that we must deal with human beings, we cannot deal with them effectively if we presume to speak to them as their superiors. No person who goes to another with an attitude of superiority is likely to find any kind of real opening to the mind or the heart of the other man. There is too much of this superior approach of " doing good to others ", too much of imagining that we are better than others. We may know a little more, we may have more comforts, we may have more privileges. But the presumption that we are better than others just because of these things is, I think, not only totally unjustified but also foolish.

Any division of people into various grades and classes of superiority or inferiority is untenable. No one, of course, would claim that all human beings are equal in character, in working capacity, and so forth. Nevertheless, the approach to other human beings on the basis of inequality of any kind—whether it be of class, or race, or nationality—is a wrong approach. It does not lead to results. One has to win the goodwill and the friendship of the persons one deals with. . . .

In conclusion, I should like to lay stress on three aspects of your work. Of these, one is the special importance of children and their health. Another is the human approach to the masses who live in this part of the world—the need to think of them always as individuals and not as graphs or curves or figures. And the third is the necessity always to remember that physical health is only a small part of total health, the rest being mental health. For if we do not have mental health, physical health will go to pieces. Therefore, in an indirect way—not directly, but in your own indirect way—you are trying to help soften the conflicts that exist in the world and are thereby creating an atmosphere which may contribute to the solution of the world's problems.

THE CHILD IN HOSPITAL

There is a growing realization that a great deal more than physical care is required if the child in hospital is to be given satisfactory therapy and be protected against any ill after-effects of the hospital experience. Few will question that the best place to care for a sick child is in his own home. When it is absolutely essential to admit him to a hospital, attention must be given to prevention of emotional disturbance and to the psychological problems to which hospitalization may give rise. Properly handled, the hospital experience may even contribute to the emotional development of the child; improperly handled, it may do irreparable psychological damage.

The problem of the child in hospital, consequent implications in the training of paediatricians, psychiatrists, and other relevant personnel, and the co-ordination of the health services which deal with the child in hospital were the three topics discussed by a study group which met under the auspices of the WHO Regional Office for Europe in early September 1954 in Stockholm.[1] This group, composed of 20 paediatricians, 10 psychiatrists, a psychologist, and a medical social worker, aimed not to produce a blueprint for general action, but to exchange experience and to stimulate wider interest in, and awareness of, the psychological aspects of illness. Six case histories were used to illustrate various types of problems and to serve as the basis of discussion.

The general conclusions which follow should not be interpreted as definite or complete, and obviously require careful modification to suit the available services and varied circumstances in different countries.

[1] A more complete report on the discussions of the study group will appear in the *Bulletin of the World Health Organization.*

THE CHILD AS A HOSPITAL PATIENT

Admission

The young child is unable to comprehend what illness is. Even for an adult, who understands that the interlude will sooner or later come to an end, admission to hospital is a major event. But the small child has no realization of time, and the break in so far as he is concerned is irrevocable unless he has some tangible means of grasping that this is not so. Further, the child may feel that being hospitalized is a rejection on the part of his parents, and fears of this nature may remain unexpressed with him for the rest of his life. It is most important, therefore, that a child be prepared emotionally for his admission into hospital, if this is at all possible. His admission should be carefully planned by the paediatric service in the light of the child's home background and of what the hospitalization is attempting to achieve.

Emergency admissions, of course, present a different problem. The physical aspects of the case have to be dealt with first and foremost. The situation is usually one of anxiety; the parents need help and support; and the child should be given ample opportunity later to " play out " his anxieties both in the hospital and after his return home.

The study group considered at length the question of whether or not it is advisable to admit the mother with the child. Mention was made of the good results which have been obtained in a hospital for surgical treatment in New Zealand where every child is accompanied by his mother and is cared for entirely by her except when he is in the operating theatre. It seems desirable that young children should have their mothers

with them throughout their stay in hospital when the paediatrician and psychiatrist feel that this is in the child's interest; in other cases, mothers may spend at least the early period of the admission with their children to help them adjust to the new situation.

In all cases, whether or not the mother remains with the child, the reception of the child must be carefully studied and an appreciation of his feelings shown. The child should be allowed to keep the toy which means " home " to him, and he should not be deprived of his clothes or forced to take a bath immediately on admission if this causes anxiety. The hospital staff, in helping him over separation from his parents, should avoid any deceptions; for, above all, the child needs to feel confidence in those who are going to care for him.

Life in hospital

Hospital design can contribute greatly to the ease with which child-patients adjust to hospital life. Ideally, wards should be small, with furnishings which appeal to children and which are similar to those most common at home. Every effort should be made to give the hospital as " home-like " an appearance as possible.

The physician or nurse who deals with children must be sensitive to the need to dispense with any routine procedures which are not absolutely necessary and which may be frightening or painful to a child. All hospital procedures ought to be viewed in the light of what they may mean to the child subjected to them.

Most important is the creation of the right emotional atmosphere in the ward. Separated from his home surroundings, the child needs to acquire some familiar support which will give him a sense of security. Efforts should be made to the extent that staffing will permit the assignment of each child to a particular nurse to whom he can become accustomed throughout his illness. It is also desirable that the same doctor should care for the child in the outpatient department as in the ward whenever this is possible.

Attitudes towards visiting by parents vary greatly from country to country and from hospital to hospital. In contrast to some countries of Europe and the Americas where it is considered desirable to " toughen " the child, visiting has never been forbidden in Italy except in individual cases where it has been considered harmful to the child. In East Africa, among a people " closer to nature ", a child is never left alone during his stay in hospital: his mother or some other member of his family is at his bedside day and night, and sometimes the whole family is with him.

One of the arguments against visiting has always been the danger of cross-infection, but an investigation in the United Kingdom produced no positive evidence that visiting by adults increased infection. With these and other relevant factors in mind, the study group in general favoured visiting.

There are certain practical problems which need to be considered if visiting is to be effectively introduced. In large hospitals, for instance, visiting hours may have to be staggered to prevent congestion. In general, visiting is best regarded as a therapeutic action, taking into account the child's relationship with his family and the parental attitude towards the child.

Mothers fit into the life of the ward much more easily when given something to do; they should be encouraged to play with the child, to give him a meal or a bath, to read a story, or to tuck him up for the night. The father is also a valuable visitor for older children where a good relationship has been established; and visits from friends of the same age are often appreciated by children.

Maintaining family relationships is more difficult in long-stay cases, especially if the hospital is far from the home; but every

effort must be made to assure the contact. Play nurses or local visitors may help to alleviate difficulties, though neither can fulfil the role played by the parents.

Discharge

In well-run paediatric hospitals, where the staff is understanding and there are play rooms and other facilities for the ambulant child, the young patient may sometimes be reluctant to go home. The child may find more friendship, pleasure, and sense of security in the hospital than in his home. If the hospital is not so pleasant, there may be residual fears and anxieties. In either situation, the idea that the stay in hospital is due to a rejection by the parents may need skilled handling. An understanding of the emotional state of a young patient on discharge from hospital is as important as on admission.

The paediatrician should discuss the implications with the parents, so that they will know how to aid the child in readjustment to his life at home. It is sometimes helpful, if the child has been in hospital for a long time, for the mother to come and spend a few days with him before he is discharged. Another alternative is for the child to make the transition to life at home gradually by going home first for a day, then for weekends, before his final return. The medical social worker and the public health nurse may give valuable assistance since they are familiar with the home situation and can help in the smooth re-establishment of good relations between the young patient and his family.

TRAINING OF PERSONNEL TO WORK WITH CHILDREN IN HOSPITAL

Throughout its discussions, the study group stressed that what is needed in dealing with the child in hospital is a synthesis of available knowledge, a co-ordination of the disciplines concerned, with a full awareness of family life and child development, which is too often neglected in medical studies. The child should be seen as a whole and in relation to his background.

The training of three special types of personnel—the paediatrician, the child psychiatrist, and the paediatric nurse—was considered at some length, and that of the child psychologist and of the psychiatric social worker was discussed particularly in terms of their roles as members of the psychiatric team. For obvious reasons the conclusions reached cannot have general application. Each country can solve the problems only in the light of its own particular needs and the numbers of relevant staff available to look after children in hospital.

The paediatrician

The proper approach to the sick child can best be learned by observation of a skilled and experienced paediatrician at work, and it is thus that the medical student should be initiated into the technique of handling child-patients. By noting the paediatrician's way of establishing contact with the child, the student learns that the child is not a miniature adult and that he has to be treated differently, as befits his age and understanding. He comes to realize, too, that the treatment of the child begins with the initial interview, and that every gesture plays its part in the success of the treatment.

In order to promote the development of a more comprehensive approach to the individual patient, team-work among the various departments of the medical teaching institution is needed. For example, the paediatrician-in-training should have an opportunity to work with a psychiatric team in a children's hospital; if this is not possible, then he should, after studying the normal child, later spend a year in a child psychiatry department, a child guidance clinic, or both, so that he

may become familiar with behaviour problems and psychological disorders in children. By learning about the normal physical and psychological development of the child, and then about the deviations therefrom and the ills to which the child may be subject, the paediatrician is able to delineate his role and know which patients he can treat and which need further expert help. He is also able to assume the role which is his—that of a "synthesizer" of modern knowledge of the child, in health and in disease.

The child psychiatrist

The child psychiatrist, like the paediatrician, needs some experience of the other discipline in order to gain a well-rounded picture of the child-patient. He should be given a chance to work in a paediatric centre where he can be taught the "dynamics of growth and development and learn at first hand about the infant and child in their different phases". Furthermore, he should, if possible, have experience with children not merely in the hospital, but also in the nursery school and in family surroundings.

The child psychiatrist's training should include basic knowledge of cultural anthropology and sociology. In this connexion, it should be noted that differences in social and cultural background from one country to another make psychiatry a difficult discipline to transmit, and training in one country may not always meet the needs of another.

Another question debated by the study group was whether or not psycho-analysis should be part of the training of the child psychiatrist. It was concluded that at least theoretical knowledge of psycho-analysis is essential and personal experience of it often desirable.

In summary, the study group felt that the child psychiatrist's special training should include: (1) knowledge of the cultural patterns of behaviour and of emotional development, (2) carefully planned training in paediatrics, (3) practice in the diagnosis and treatment of both adults and children, as a result of his psychiatric and neurological training, and (4) experience of personal psycho-analysis, unless this is contra-indicated or is not feasible. The necessity for such varied and extensive training was explained by one member of the group who said:

> "The problem of mental illness in many countries of Europe today is of similar magnitude to that of physical illness in tropical parts of the world. There is an acute sense of the need to have specialists to deal with this. There is intense pressure from the lay public. The possibility of giving qualified help is not good. It seems important that the relatively few specialists there are, besides being clinicians, should be given the chance to act indirectly through training future doctors. For this task they need the best possible training and qualifications."

The paediatric nurse

The nurse who works with children needs special training, with due attention given to comprehensive study of child development as well as to illnesses and their treatment. The study group emphasized the desirability of improving the nurse's status by accepting her as a full member of the paediatric team, drawing her into conferences and discussions, and improving her training and pay.

As part of her training, the paediatric nurse should gain an understanding of the psychological aspects of illness. She must be aware of her role as a parent substitute to the child in hospital, and of what this means to her as well as to the patients: her role as mother may become one which she enjoys and guards too jealously, thereby creating additional emotional disturbances. If the nurse during her training period understands the psychological aspects of her future work, she is better able to deal with such situations when they arise.

The nurses least easily won over to the more individual and human approach to children in hospital are those whose training

and experience have steeped them in routine procedure. Such staff members need to be re-orientated and to be allowed to be less rigid in their practice when it relates to children—to " humanize " hospital care.

Various practical measures were suggested by the study group for alleviating the shortage of nurses. Among them were the use of auxiliary personnel for some functions that do not require special training, and the short-term training of nurse-assistants for the same purpose. The possibility of recruiting male nurses for work with children was mentioned as being also worthy of further consideration.

CO-ORDINATION OF PAEDIATRIC AND PSYCHIATRIC SERVICES

With the aid of a number of case histories, the study group considered methods of co-ordinating paediatric and psychiatric services. The chief question was " When should the paediatrician call in the psychiatrist ? ". It was agreed that whenever a case seemed likely to be chronic and was obviously associated with emotional factors—common examples being found among children with asthma—the psychiatrist should be consulted at the point of diagnosis, since careful diagnosis is, in fact, the first step in treatment. An illustration was cited of a polyclinic for asthmatic cases in Helsinki where a psychiatrist and a social worker are members of the staff, see all cases, and give outpatient treatment whenever investigation justifies it. The results have been most satisfactory.

One method of co-ordinating services is what is referred to as " multiple rounds ", in which the paediatrician is accompanied on his ward visits by other members of the team—psychiatrist, psychologist, social worker, and others concerned.

The interrelationship of the paediatric and psychiatric departments was discussed at length by the study group, and it was generally agreed that the first consideration is the prevention of serious psychiatric illness through the offices of the paediatrician, the family doctor, the health visitor, and the maternal and child welfare services. Next in importance is the co-ordination of paediatric and psychiatric services so that mental disorders may be recognized and treated early. Prevention and early recognition of psychiatric illness can do much to relieve the pressure of work on the trained psychiatrists, of whom there are far too few to meet today's needs.

The child psychiatrist should act as a consultant and advise the paediatrician in certain cases in the same way as does the radiologist or the pathologist. In others, where psycho-therapy is called for, he should assume full charge, though with the continuing collaboration of the paediatrician as indicated. When the child psychiatric unit is an independent one, it should be situated near the paediatric department so that a two-way exchange of assistance may be facilitated.

Only through the co-ordination of all the various specialists concerned with the care of children can a comprehensive picture of the child-patient be obtained and adequate treatment be given.

Morbidity and Mortality Statistics

Volume 7, number 12, of the *Epidemiological and Vital Statistics Report* is devoted to statistical data on mortality from gastritis, duodenitis, enteritis, and colitis (except diarrhoea of the newborn), and on cases of, and deaths from, certain infectious diseases—cholera, typhoid and paratyphoid fevers, diphtheria, and infectious hepatitis.

DENTAL HEALTH

Meeting of a WHO Consultant Group

Although dental diseases are perhaps the most common and most widespread of all human ailments, they are often neglected in public health services. For some time there has been a demand that WHO turn its attention to this problem. Accordingly, the Director-General invited a group of consultants to meet and prepare a report which would assist him in formulating a dental health programme for the Organization. The group[1] met in Geneva from 20 to 25 September 1954. It reviewed present knowledge of the prevalence of dental disorders and of the various types of dental disease and their control, considered present needs in dental services, and outlined a programme which included prevention, treatment, education, and research.

DENTAL DISEASES AS A PUBLIC HEALTH PROBLEM

Dental diseases are not peculiar to any one group of people, whether defined geographically or ethnically; nor is their occurrence restricted to those of a certain age, sex, or economic status. Probably no other group of diseases affects so large a proportion of the world's population. Evidence from widely separated parts of the world gives an idea of the universality of dental disorders: in the USA, more than 90% of the people, from early childhood to advanced age, have been estimated to be afflicted with dental disorders; an examination of children in a mining town in South-West Africa revealed an "appalling amount of caries"; and, in a survey of children over five years of age in an area near Sydney, Australia, more than 97% were found to have dental caries.

Economically, dental diseases represent a drain upon both health services and individuals. For example, the National Health Service of Great Britain during 1949-50 spent approximately the equivalent of US $110.3 million for general dental services, excluding the amount spent by local health authorities for the dental care of children and of nursing and expectant mothers; and, in the USA, about $1.6 million was spent by individuals for dental care in 1953.

Dental health is significant from a public health standpoint because an efficient masticatory system is essential for the full growth and development of the child and important to the well-being of the adult. In addition, dental ill-health lowers bodily resistance and may cause systemic diseases. Dental problems are a responsibility of the community as well as of the individual, and a better appreciation of this responsibility might be gained if certain types of information could be obtained—e.g., information on the prevalence of dental diseases, their consequences in terms of work-hours and wages lost, their importance as a cause of subnormal health and chronic debility, and the efficacy of preventive measures.

[1] Invited participants in the consultant group were: Dr. Saiful Anwar, Director, Public Health Service, East Java, Surabaya, Indonesia; Dr. H. Berggren, Director, Eastman Institute, Stockholm, Sweden; Dr. P. E. Blackerby, jr, Director, Division of Dentistry, W. K. Kellogg Foundation, Battle Creek, Michigan, USA; Dr. J. W. Knutson (Chairman), Chief Dental Officer, US Public Health Service, Washington, D.C., USA; Dr. G. H. Leatherman, Secretary-General, Fédération Dentaire Internationale, London, United Kingdom of Great Britain and Northern Ireland; Dr. C. F. Mummery (Rapporteur), Chief Dental Officer, Malayan Medical Service, Kuala Lumpur, Selangor, Malaya; and Dr. J. Stork, Honorary Treasurer, Fédération Dentaire Internationale, Aerdenhout, Netherlands.

MAJOR HAZARDS TO DENTAL HEALTH AND THEIR CONTROL

Dental caries

Dental caries takes a regular and uniform course in its attack on the different surfaces of the teeth: it destroys the hard tissues, producing lesions which progressively increase in size. Through the blood vessels of the pulp, dental caries may cause infection in other organs of the body; and the digestive disturbances to which it may give rise are also injurious to the general health of the individual. The consequences of the disease are especially serious in childhood and adolescence.

There are now scientifically based means of controlling caries. One is reduction in the consumption of sticky, fermentable carbohydrates, especially between meals. Related to this is the removal of such foods from the surfaces of the teeth before they are converted into acids. Ending meals with fibrous, self-cleansing foods may serve the purpose; another means is, of course, systematically brushing the teeth immediately after meals. An alternative, if brushing the teeth is not practicable, is to rinse the mouth thoroughly within ten minutes after eating. A method of caries control which has been proven effective in recent years is fluoridation of drinking water or topical application of fluorides to increase the resistance of the teeth to caries attack. Most important of all is the provision of an adequate diet, particularly for expectant and nursing mothers and for children from the earliest age.

Periodontal diseases

Periodontal diseases probably cause loss of teeth to a greater extent than do dental caries. This loss, in turn, causes masticatory insufficiency and may lead to digestive and nutritional disorders. However, the recognition and treatment of periodontal diseases are often neglected because they rarely cause pain.

There is less reliable knowledge of the periodontal diseases and their control than of dental caries. Their prevention depends largely upon education in proper diet, effective chewing, and correctly applied oral hygiene. The use of stiff, pointed twigs, which is a common practice in some areas, should be avoided. Irregularities of the teeth, carious lesions, and defective restorative work may all contribute to periodontal diseases and should be corrected or treated, as the case may be.

Irregularities of the teeth and jaws

These conditions, in their severe forms, may cause psychological as well as physical damage. They are sometimes responsible for periodontal disease and an increased susceptibility to dental caries, and they frequently result in masticatory insufficiency.

Most special corrective measures against irregularities of the teeth and jaws have to be prescribed by the dentist after he has made an adequate diagnosis. The attention of the public should be drawn to the effects of bad habits such as finger- or thumb-sucking, which may contribute to these irregularities, and to the importance of proper diet, which aids normal development of the jaws and acts in a general way against caries, thus keeping both the deciduous and the permanent dentition intact as long as possible.

Hare lip and cleft palate

This common congenital defect is apt to cause dental disorders and may later be associated with serious emotional disturbances. In areas where statistics are available, it has been noted to occur in approximately 1 in every 800 live-births.

No preventive measures for hare lip and cleft palate are known. Emphasis should be

placed on its early treatment,and the qualified dental practitioner should be a member of the treatment team.

Oral cancer

According to statistics in countries where comprehensive data are available, oral cancer comprises about 8% of all reported cases of cancer. From a dental health viewpoint, the important factor with regard to oral cancer is its early detection and referral for further diagnosis and treatment to the proper practitioners.

COLLECTION OF BASIC DATA FOR PLANNING A DENTAL HEALTH PROGRAMME

The solution of dental health problems must be based on information on the prevalence and extent of dental diseases in a population in relation to its cultural, social, and economic characteristics. To obtain this information, surveys should be made; and such surveys should be integrated with, and utilize, the findings of other surveys, in the interests of efficiency and economy and to prevent unnecessary duplication of effort.

For an estimation of the prevalence of dental caries, a sampling technique may be used, a survey being made of a certain proportion of each age-group of the population. Inspections, using a mouth mirror and explorer, should be made by personnel—qualified dental practitioners or others—trained in this technique to determine the number of decayed, missing, or filled permanent teeth. The information recorded for the proportion of each age-group may then be applied to an established correlation curve to estimate the prevalence of caries for the total age-group.

Standardized survey methods have not yet been devised for dental disorders other than caries. In general, it may be said that each case must be assessed on a qualitative basis, and that this requires specially trained personnel.

In addition to an estimation of the prevalence of dental diseases, the survey which is to serve as the basis for planning a dental health programme should include information concerning economic characteristics of the population, including occupations, etc.; social customs and religious attitudes, beliefs, and interests; food habits, including selection, preparation, and consumption of foods and their nutritive values; relevant practices such as mouth-cleansing, betel-nut-chewing, and sucking of sugar cane; drinking-water resources, including the fluoride content of the water; patterns of community organization; educational resources, including channels of communication; transportation facilities; and dental personnel and equipment resources.

ORGANIZATION AND ADMINISTRATION OF A DENTAL HEALTH PROGRAMME

Personnel

The qualified dental practitioner is the first essential in planning, organizing, and administrating a dental health programme. Auxiliary and ancillary personnel may play an active part in both preventive and curative services, but their role must be supplementary to, not a substitute for, that of the qualified dental practitioner. Governments should give adequate attention to establishing, or aiding the establishment of, educational facilities for all types of dental personnel, and to assuring that the training given is of a satisfactory standard.

The planning and implementation of a dental health programme on a national or regional basis should be the responsibility of a person who is a graduate of a recognized professional dental institution, who should have had experience in the administration of dental public-health programmes, and who,

in addition, should preferably have completed post-graduate work in public health.

The key person in dental health services should be the qualified dental practitioner. Although it is recognized that the standards of professional education and training in dentistry vary greatly from one country to another, no population should be satisfied with less than the highest standards of professional services it can command.

In order to utilize most effectively the knowledge and skill of the qualified dental practitioner, dental services should include auxiliary and ancillary personnel. By dental auxiliaries are meant those who carry out certain treatment procedures in the mouth under the supervision of a qualified dental practitioner; dental ancillaries are those who assist qualified dental practitioners but who do not actually give treatment. The standard of training of auxiliaries and ancillaries will depend to a great extent on socio-economic conditions, including the educational levels within a country, and on the recognized needs in dental health.

Services

Dental services may be classified as preventive and curative. The type of services will vary widely according to the needs, resources, and degree of development of a country. The manner of providing these services will also vary, ranging from a complete system of private dental practice to that of fully government-sponsored services.

When the development of a comprehensive dental health service is not possible, certain priorities should be established. The following order is recommended: (1) relief of pain and acute infection; (2) dental care of preschool, school-age, and adolescent children, this to include both prevention, in the form of education beginning with the expectant mother, and treatment, which should commence at the earliest possible age; (3) dental care of expectant and nursing mothers; and (4) dental care of other adults.

A dental health programme should be an integral part of general health services, functioning in close co-operation with units such as hospitals, clinics, maternal and child health centres, and school health services. In addition, there should be liaison not only with other health personnel, but also with educators, the local population, and local authorities.

HEALTH EDUCATION

Promotion of dental health requires education of the public in principles of balanced diet, oral hygiene, and other health practices which aid in preventing dental disorders. The methods used for this health education must be appropriate to the social, economic, and cultural conditions of the people, and will vary accordingly from one country to another. Generally speaking, however, education for dental health should aim to stimulate recognition of dental health problems, aid in developing procedures for solving these problems, and encourage acceptance of responsibility for effecting improvements. To achieve these aims, the initiative, aggressive support, and participation of the population concerned must be enlisted.

While means of mass communication—posters, books, film strips, etc.—may be effective in dental health education, particularly of children, a better approach might be through "educating the educators"—e.g., dentists, physicians, nurses, midwives, and teachers—who, if adequately informed and motivated, can do much to promote dental health.

RESEARCH

In dentistry, as in other sciences, there are many problems on which intensive research

is needed. Although research has already resulted in considerable progress in both preventive and restorative dentistry, comparatively little financial support has been available for scientific investigation of dental diseases.

Every possible effort should be made to encourage greater support for laboratory and clinical research in dentistry and for investigations in dental education and in dental public-health administration.

POSSIBLE FUTURE DEVELOPMENTS

The WHO consultant group gave due attention to possible future developments in dental health. While some of its suggestions were in the nature of administrative and organizational recommendations addressed directly to WHO, others were of wider scope and of general interest to dental and public health workers.

It was suggested, for example, that advice and assistance should be given to strengthen the education and training of dental personnel. These might include aid in establishing educational facilities where needed; providing fellowships for study at home or abroad; making teachers available in special branches of dentistry; developing courses in public health for dental personnel; supplying teachers and guidance for training of dental auxiliaries and ancillaries; assistance in the provision of training in dental health education for health workers, teachers, and other relevant personnel; and aid in providing the means for translating text-books so as to widen their effective use.

The advisability of stimulating and coordinating studies on dental health was also stressed, such studies to be carried out at the level of each individual country as well as on an international basis. Among the subjects singled out for possible study were: scientific methods in preventive and curative services; etiology, pathogenesis, and epidemiology of dental diseases; nutritional problems in relation to dental diseases and habits; vehicles for fluoride consumption, and methods of topical application of fluoride; racial immunity to caries, and racial tendency to periodontal disease; statistical studies of the incidence of dental diseases in the light of environmental factors, such as natural variations in soil, water, etc; problems of dental education and dental public-health administration; the role of auxiliary and ancillary dental personnel under varying conditions; methods of teaching dental health; governmental standards and regulations with regard to dental education and dental practice; and dental educational institutions and their curricula in different countries.

The group emphasized the value of conferences and seminars on a regional basis to facilitate the exchange of scientific knowledge and experience in dentistry.

Statistics on Venereal Diseases

A recent issue of the *Epidemiological and Vital Statistics Report* (1954, volume 7, number 11) presents a collection of statistical tables on syphilis, gonorrhoea, and lymphogranuloma venereum. It includes data on deaths attributed to syphilis since the beginning of the twentieth century, deaths due to general paralysis of the insane since 1921, mortality from syphilis (all forms) and from general paralysis of the insane since the beginning of the twentieth century, deaths from various forms of syphilis (overall data and data by age-group, specific mortality-rates for syphilis and general paralysis by sex and age), and infant mortality from syphilis. These statistics may serve as a kind of introduction to studies of venereal diseases subsequently to be undertaken.

RESULTS OF RECENT INTERNATIONAL STUDIES ON TUBERCULOSIS

The WHO Tuberculosis Research Office, Copenhagen, is engaged in large-scale investigations of many problems in tuberculosis control. The results of some of the studies, a number of which have been carried out with the co-operation of national health services and research institutions in many parts of the world, appear in a recent number of the Bulletin of the World Health Organization. *The following account is adapted from the introduction to that number of the* Bulletin.

While it is generally believed that " BCG vaccination does not take the place of other recognized methods of tuberculosis control . . . ",[1] WHO and many governments have accepted it as a useful public health measure. More than a hundred million persons have been vaccinated in a number of countries in recent years. Campaigns on such a scale have obviously required enormous effort and expenditure; yet many of the most fundamental problems with regard to BCG vaccination are still far from solved. Should BCG be given to everyone whether or not he has been infected with tuberculosis; or, if it should be given only to those not previously infected, what is the most efficient technique for selecting these persons ? Is it essential that sensitivity to tuberculin develop after vaccination—if so, how strong should that sensitivity be ?—or can immunity exist even though sensitivity is not produced ? Can better vaccines and methods of vaccination be developed ? Is BCG vaccination an effective public health method for tuberculosis control ? Is it worth what it costs ? All these questions are of immediate practical significance.

Vaccination, however, is only one facet of tuberculosis control, in which there are many more problems. The new chemotherapeutic drugs effective against the tubercle bacillus raise high hopes; but their value in public health work—both for treatment and for prevention—is not yet known. Tuberculosis in cattle was recognized long ago by veterinarians as a serious problem; yet there is little indication at present as to the extent to which it contributes throughout the world to the problem of tuberculosis in human populations. Tuberculin sensitivity in the human has been extensively studied; yet it is still impossible to determine, in those parts of the world where there is much non-specific sensitivity, the proportion of individuals actually infected with tuberculosis.

Answers to some of these questions will, no doubt, be found in time through isolated individual research. However, some problems call for an immediate solution; and still others are of such magnitude that they can be solved only by systematic, long-term research and by international co-ordination of the research under way in different parts of the world. It was to deal with such problems that the World Health Organization Tuberculosis Research Office (TRO) was set up in February 1949 in Copenhagen.

Some of the results obtained by the TRO up to the end of 1953 have been published in the *Bulletin of the World Health Organization*,[2] in a monograph on BCG vaccination,[3]

[1] *Off. Rec. Wld Hlth Org.*, **11**, 7

[2] *Bull. Wld Hlth Org.*, 1950, **3**, 1, 279; 1952, **5**, 245, 333; 1952, **7**, 201; 1953, **9**, 821

[3] Edwards, L. B., Palmer, C. E. & Magnus, K. (1953) *BCG vaccination*, Geneva (*World Health Organization : Monograph Series* No. 12)

and elsewhere. The results of further systematic studies, published in a recent number of the *Bulletin*,[4] are briefly summarized here.

Experimental studies on vaccination, allergy, and immunity

To determine whether a strong tuberculin reaction in the human is indicative of increased resistance to tuberculosis requires observation of a large number of persons over a period of many years. It was believed that relevant information on this problem could, and should, be obtained by experimental studies in animals. Accordingly, studies were undertaken in which the TRO field studies on BCG vaccination of schoolchildren were duplicated in large numbers of laboratory animals in order to compare responses to various doses and kinds of vaccine in animals and in man, and then, by infecting the animals with virulent tubercle bacilli, to measure the resistance produced by vaccination and to study the association between resistance and allergic response.

The results already obtained in the course of such experiments indicate that the degree of tuberculin sensitivity in groups of vaccinated animals closely parallels the degree of resistance to tuberculous disease. Both are related to the dose of living BCG given by intradermal injection: the stronger the dose, the higher the degree of tuberculin sensitivity and the higher the degree of resistance. It is still much too early to draw final conclusions, but the results thus far seem to justify the attempt to produce strong degrees of tuberculin sensitivity in persons vaccinated with BCG.

Naturally acquired tuberculin sensitivity

Ever since Koch's discovery of Old Tuberculin, the tuberculin test has been used for diagnostic as well as epidemiological work. A basic assumption underlying the use of the test has, until recently, been that the sensitivity elicited by any dose of tuberculin is specific for virulent tuberculous infection. This, however, was never definitely established.

A TRO study has confirmed and extended previous reports that tuberculosis is not the only cause of tuberculin sensitivity in human populations. The evidence obtained from this study makes it clear that other factors, as yet unknown, must be responsible for much of the tuberculin sensitivity observed in some parts of the world. Because persons with specific sensitivity cannot be satisfactorily distinguished from those with non-specific sensitivity by tuberculin products in use today, the tuberculin test is less efficient for identifying tuberculosis-infected persons in countries where non-specific sensitivity is common.

Human sensitivity to human and avian tuberculins

Specific and non-specific sensitivity in domestic animals have been recognized for some years by veterinarians, who have developed a comparative test procedure with mammalian and avian tuberculins for use in cattle. The usefulness of this procedure having been proven in animals, it has now been tried in humans by simultaneous tests with both human and avian tuberculins in areas with high and low prevalence of non-specific sensitivity. The non-specific sensitivity in the population studied is not thought to be caused by infection with tubercle bacilli of the avian type. The results of the trial suggest that comparative testing with antigens prepared from other types of micro-organisms may disclose a practical way to distinguish persons with specific from those with non-specific tuberculin sensitivity.

[4] *Bull. Wld Hlth Org.* 1955, **12**, 1-310

Non-specific tuberculin sensitivity

The practical consequences of the existence of non-specific tuberculin sensitivity are illustrated by data collected in India by a WHO/UNICEF Regional BCG Assessment Team. Non-specific tuberculin sensitivity is highly prevalent in many parts of the country and causes serious difficulties in the selection of uninfected persons for BCG vaccination: in some areas more than half the uninfected are not being vaccinated because their tuberculin reactions are large enough to be considered " positive ". Another complication is that even among BCG-vaccinated persons there has been found to be a high proportion displaying such a low degree of tuberculin sensitivity that the question arises whether those persons should be re-vaccinated. Moreover, the degree of BCG-induced sensitivity varies inexplicably from group to group. Such factors have made it apparent that the problems raised by a BCG campaign are far more complex than had been anticipated.

BCG-induced tuberculin sensitivity

A low degree of sensitivity after vaccination need not necessarily be expected in all populations, as evidence from a study of more than six thousand vaccinated schoolchildren in Denmark indicates. The sensitivity produced by BCG is about as strong as the sensitivity produced by natural (virulent) infection, and has now persisted for five years without evidence of waning or loss. When such strong and persistent tuberculin sensitivity is produced by vaccination (and this is the aim of most BCG programmes), the diagnostic value of the tuberculin test is destroyed.

Lymphadenitis following BCG vaccination

Since an alarming frequency of enlarged and suppurative regional lymph-nodes in infants was found in certain BCG campaigns, a study was made of the response, particularly the lymph-node response, to BCG vaccination in children of pre-school age. The results confirm the general impression that both the dose of BCG and the age of the child contribute to a higher frequency of suppurative lymphadenitis in younger than in older children while having little effect on the resulting tuberculin sensitivity.

The important finding in this study is that gross inaccuracies exist, usually resulting in gross overdosage, when the volume of vaccine injected is gauged by the size of the wheal raised in the skin, a common practice in mass vaccination programmes because syringes so often leak. While it is difficult to give a measured dose of vaccine with leaking syringes to persons of any age, the difficulty is accentuated in infants, probably owing to the texture of the skin. Leaking syringes are thus a major factor in causing the lymph-node complications frequently reported in young children.

Technical problems

Among the minor technical problems that require a practical solution are the following: What is the difference between 5 TU and 10 TU as a one-dose tuberculin test for survey work in a general population ? Does exposure to light damage tuberculin ? Will the results of a programme be affected if the tuberculin reactions are not always read at a fixed interval of time after the test has been given ? Can the same site on the forearm be used repeatedly for tuberculin-testing ? Each of these questions has been made the subject of an investigation, and the results, which are reported in the *Bulletin*, are of practical significance to all those engaged in BCG vaccination.

Tuberculosis mortality in Finland

The mass BCG vaccination campaign in Finland is offering an opportunity not

afforded by any other to learn something about the course of tuberculosis in a general population after such a campaign has been carried out. At the time of the campaign, Finland still had a large number of deaths from tuberculosis (an annual rate of about 150 per 100 000 population). Within 18 months a large proportion of the population up to 25 years old was given BCG vaccination, and individual records for persons tested and vaccinated are assumed to be available and complete. Reports of current deaths from tuberculosis can be made available also, and trends in tuberculosis death-rates evaluated in the light of mortality statistics from 1878 onwards. It will eventually be possible to correlate the results obtained by the BCG campaign in Finland with a complete study, published in the *Bulletin*, of tuberculosis mortality over the past 75 years.

While Finland has seen a precipitous fall in tuberculosis mortality since 1948, the material available to date offers no conclusive evidence that this fall can be ascribed to BCG vaccination, as similar changes have been observed in other countries where BCG has been used either sparingly or not at all. Follow-up studies are now in progress, based on the records of 850 000 persons tuberculin positive or vaccinated in the mass campaign; and it is hoped that these studies will provide further relevant information.

Dual reading in mass radiography

A unique file of the record cards for 1.5 million Danish persons tuberculin-tested, X-rayed, and BCG-vaccinated has been compiled by the Danish Tuberculosis Index and has afforded a most valuable opportunity for the study of many problems. One of these studies analyses the value of dual reading as a routine procedure in mass radiography. It is based on nearly half a million photofluorograms taken in the first counties covered by the mass campaign. The films were first read by the county's chief chest physician, then submitted to a " central " reader, who interpreted the films without knowing the result of the first reading. By this procedure the number of cases of active tuberculosis detected by the mass campaign was increased by 20%, and the number of cases found of clinically significant pulmonary disease other than active tuberculosis was increased by 45%.

This procedure becomes even more significant if it is realized that mass radiography, which is an important tuberculosis case-finding procedure in many parts of the world today, may well be used to an even greater extent in the future in connexion with antimicrobial drug therapy programmes.

Relation of tuberculin sensitivity to pulmonary calcifications

In a study of the reliability of the single-dose 10 TU tuberculin test for identifying tuberculosis-infected members of the population, tuberculin reaction size was correlated with the frequency of pulmonary (presumably tuberculous) calcification found on the chest photofluorograms for different age-groups in the population. It appears that the size of the reaction to the 10 TU test is an entirely reliable sign of tuberculous infection in Denmark, at least for persons up to 55 years old.

Tuberculin sensitivity as index of prevalence of bovine infection

Another study has shown definite differences in the average size of tuberculin reactions among adults in different counties in Denmark. The most likely cause of the differences is the prevalence of bovine tuberculosis in the various counties during the past several decades: where bovine tuberculosis has been highly prevalent, the size of the tuberculin reaction is larger than in counties with little previous bovine infection. If confirmed by further studies now under

way, this finding may lead to an epidemiological method for estimating the significance of bovine infection in countries where little is known about the prevalence of tuberculosis in cattle.

Serological studies of tubercle bacilli

The question of how specific resistance to tuberculosis can be measured, which is a most urgent one, remains unanswered, despite many laboratory and clinical investigations during the past decades. It is hoped that serological and histological studies of the immune response in animals, undertaken by the Tuberculosis Immunization Research Centre in collaboration with the field research programme of the TRO and with other centres and laboratories, may lead to the development of a practical laboratory test to measure quantitatively the specific resistance produced by tuberculosis infection and vaccination in man. The first step in this work is described in a paper by the Tuberculosis Immunization Research Centre on the chemical fractionation of culture filtrates of tubercle bacilli and the use of the fractions in various serological tests in an attempt to find promising leads for a useful test. Extensive work with sera from experimental animals is necessary before the procedures can be evaluated on sera now being collected in field studies by the TRO on large groups of persons with different kinds and degrees of tuberculin sensitivity and tuberculosis infection.

Data on BCG programmes

Comprehensive data for the WHO/UNICEF BCG programme during the two-and-a-half-year period from July 1951 to the end of December 1953, with detailed tabulations of the numbers of persons tuberculin-tested and vaccinated in each country, by age and sex, are included among the TRO studies published in the *Bulletin*. For many countries the data on the frequency of positive reactors constitute the only information available on the prevalence of tuberculous infection. The value of these statistics may well increase with time, for the mass vaccination programmes can be expected to destroy the epidemiological and diagnostic value of the tuberculin test for many years to come.

KWASHIORKOR IN CENTRAL AMERICA

Various syndromes associated with malnutrition were described in Central America under different names as early as 1908; they were generally ascribed to vitamin deficiency or multiple nutritional deficiencies. From 1944 onwards, most investigators emphasized the special importance of protein deficiency in the syndrome and related it to similar syndromes observed in other parts of the world.

Although the name " kwashiorkor " has now become widely applied to this clinical entity, the broader expression *sindrome policarencial infantil* (multiple deficiency syndrome in children) is more commonly used in Central and South America.[1]

In 1951, FAO and WHO sent a mission to Central America to investigate the syndrome associated with protein deficiency and to study its relation to that already described in Africa as " kwashiorkor ". This survey was carried out in five countries— Guatemala, Honduras, Nicaragua, Costa Rica, and Panama. Health authorities, doctors, paediatricians, social workers, and nutrition

[1] See *Chron. Wld Hlth Org.*, 1954, **8**, 317.

experts were consulted; and hospitals, maternity and outpatient clinics, infant and child welfare centres, schools, and nutrition centres in the more important towns were visited. Representatives of the Institute of Nutrition for Central America and Panama (INCAP) accompanied and helped the mission.

A report of the mission's survey and findings has been published in a recent number of the *Bulletin of the World Health Organization*,[2] from which the following résumé is taken.

Clinical features

The clinical features of the syndrome are fundamentally the same as in kwashiorkor and may be grouped under six headings. First, changes in general health include retardation of growth, more marked for weight than for height; functional retardation; and psychological changes, which consist mostly of a mixture of apathy and irritability. Secondly, changes in the digestive system include diarrhoea, which is almost always present, either as a consequence of the syndrome or as a pre-existent precipitating factor; anorexia, which may constitute a serious obstacle to dietary treatment; vomiting; and, in a number of cases, enlargement of the liver. Thirdly, metabolic changes are among the most typical and consist of oedema, sometimes associated with dehydration, and hypoproteinaemia. Fourthly, changes in the skin mucous membranes and hair include hyperpigmentation of the skin, the affected areas frequently ulcerating in severe cases; keratinization; vascular changes; congestion and atrophy of mucous membranes; changes of colour and texture of hair, the dyspigmentation of which sometimes causes an appearance described as the " flag sign " *(signo de bandera)*. Fifthly, changes in the cardiovascular and haematopoietic systems consist largely, and constantly, of anaemia, usually of the normocytic or slightly macrocytic and slightly hypochromic type, and, in some cases, of cardiac alterations. Finally, changes in bones and muscles are represented by a retardation in bone development, dental caries, and muscular atony and atrophy.

Prevalence and effect on infant mortality

The syndrome has been observed in children from a few months old up to the age of 12 or 13 years. About 60% of all cases occur between 1 and 4 years of age. Above that age it is more frequent than in Africa, and it is often found in school-age children not attending school.

An exact assessment of the actual prevalence of the syndrome is very difficult, as only a small proportion of all cases reaches the hospitals, and numerous—and sometimes severe—cases have been seen at infant welfare clinics and in homes. In Costa Rica the number of cases admitted has increased since 1946, but this may be due to better detection of cases and to the fact that mothers now more willingly bring their children to the doctor. These factors may also account for the marked decrease in the mortality from the syndrome in that country.

A survey was made in Sumpango, Guatemala, on all deaths recorded during one year, in order to assess the role of malnutrition as a factor in child mortality. Out of a total of 251 deaths, 192 (76.5%) occurred among children under 6 years old—53 (21.2%) under 1 year. Analysis of deaths by broad groups of causes showed that in the second, third, and fourth years of age digestive causes had been responsible for between 57.1% and 87.5% of the total deaths in each one-year age-group, the main cause of death being severe malnutrition with various complications.

[2] Autret, M. & Behar, M. (1954) " Le syndrome de polycarence de l'enfance en Amérique centrale (kwashiorkor) ", in *Bull. Wld Hlth Org.*, **11**, 891. This study has also been published in *FAO Nutritional Studies*, No. 13, in English, and in the *Boletín de la Oficina Sanitaria Panamericana*, in Spanish.

Influence of diet on the syndrome

As shown previously in Africa, there is a direct relation between the diet and the syndrome. The growth curve of breast-fed children is normal during the first few months, but it generally falls off after 6-8 months among the poorer populations of the interior. In general, weaning takes place between the ages of one year (among whites or in towns) and two years or more (among Indians). Mixed feeding, whenever started, almost always consists of maize gruel *(atole)* supplemented by sweetened water *(agua dulce)* and later by potatoes or sweet potatoes, various roots and vegetables, *tortillas*, bread, and occasionally fruit. Between 18 months and three years of age, the children are given the usual family diet, based mostly on maize. Protein-rich foods such as milk, meat, and eggs are rarely included in the diet of the poorer families.

Dietary surveys have been conducted in Guatemala, Honduras, and Costa Rica to determine quantitatively the various foods consumed in groups of rural families selected at random and to assess the value of their nutrient content. While the calorie value of the daily ration is more or less satisfactory (94-102% of the requirements), as is the total protein intake (82-116%), the animal protein intake is very low; and the requirements in calcium, vitamin A, niacin, riboflavin, and ascorbic acid are far from adequately met.

In poor families—in which the syndrome mostly occurs—food consumption is even lower than that of the groups surveyed. An attempt was made to investigate the actual food consumption of children with the syndrome who lived in poor families in Costa Rica. Compared with the actual food intake of a healthy four-year-old Guatemalan child taken as a " reference child " and with the standards recommended by the US National Research Council, the actual consumption of these children was strikingly unsatisfactory.

Poverty is thus the main etiological factor responsible for the syndrome, which occurs mainly among very poor families where both protein consumption and calorie intake are low; the diet is always badly balanced, and all degrees of undernutrition and malnutrition are seen. However, ignorance also plays a role in maintaining bad feeding habits during or after weaning, as well as during illness of children, when the diet given to them is still more unbalanced. An example of this is provided by a survey covering four families, in which one child showed the syndrome: although the diet of the families as a whole was relatively satisfactory in most its elements, that of the children was highly deficient in all the nutrients and must have accelerated the course of the disease.

Treatment

Treatment of the syndrome in Central America is based on the generally accepted etiology, namely, primary protein deficiency, vitamin deficiency due to inadequate intake, and, frequently, more or less severe undernutrition. The treatment is essentially dietary, and consists largely of the administration of skim milk—frequently acidified or supplemented by dextrose—animal proteins, fresh vegetables, and as little fat as possible. When anorexia, diarrhoea, and oedema have disappeared, a more complete and varied diet is introduced, composed predominantly of foods rich in proteins and vitamins and providing an adequate supply of calories.

Although vitamin deficiency is an aggravating factor in the syndrome, it is not always necessary to administer vitamins in therapeutic doses. Large doses of the vitamin-B complex, for instance, have been found not merely useless but harmful. The only vitamins that might be specially given when there is a definite deficiency are vitamins A and C, which are lacking in a skim-milk diet. It is always preferable to give vitamins as com-

ponents of a good diet rather than as vitamin preparations.

Various therapeutic methods or agents have been tried as adjuvants to the dietary treatment or in emergency cases and have given good results. These include lipotropic agents, anti-anaemic preparations, blood transfusions, plasma and amino-acid solutions, and parenteral rehydration.

The treatment given in the principal hospitals of Central America is usually excellent and has resulted in a reduced mortality rate. However, in numerous secondary hospitals, it is still unsatisfactory owing to either ignorance or lack of staff or funds.

Prevention

Methods recommended for preventing the disease include: (*a*) increased production and consumption of foodstuffs rich in animal or vegetable proteins; (*b*) education of the public in nutritional matters; (*c*) public health measures; and (*d*) supplementary feeding programmes for the vulnerable groups. Additional animal proteins could be introduced by increased use of skim milk (enriched or supplemented by vitamin A where necessary) and of fish. Attention should be given to the production and consumption of cheap, dried, salted, or smoked fish, and to the preparation of fish flour in a form that would make it acceptable.

An increased protein consumption, however, will for a long time depend mainly on vegetable sources. The possibilities suggested in this field are: developing new varieties of maize, with a higher content of methionine and tryptophane; increasing the production of certain plants, such as beans, which are already consumed, and selecting the varieties with a high protein content and a balanced amino-acid composition; promoting the consumption of ground-nuts, either untreated or in the form of presscake in combination with starchy roots; and using soybean milk as a milk substitute. An attempt has also been made in Mexico to produce a powder incorporating 10% soybean and 90% maize, which can be used for the preparation of *tortillas* without altering their taste.

Education of the public in questions of nutrition, directed at first towards mothers and schoolchildren, would result in an improvement in food consumption and in the nutritional status of the population. Special programmes of education are already carried out by the INCAP and several co-operative bodies. Pending the results of these long-term measures, supplementary feeding programmes—particularly the supply of milk to children by UNICEF—have been developed for the most needy groups of the population and should be extended.

Insect Control Symposium Papers Published

The papers presented at the First International Symposium on the Control of Insect Vectors of Disease (see *Chronicle of the World Health Organization*, 1954, **8**, 129) have now been published and are available through the Fondazione Emanuele Paternò, Viale Regina Elena, 299, Rome. The papers are in either French or English, with summaries in these two languages and in German and Italian.

Notes and News

Consultant Group on Atomic Energy in Medicine and Public Health

In December 1954, the Director-General convened a group of four scientists to consider the role of atomic energy in the development of medicine and biology and the responsibilities of WHO in this new field. The two main topics of discussion of the consultants were (1) the problems of health protection in dealing with atomic energy, including the disposal of radioactive waste material, nuclear reactor safety, definition of radiological units, and standardization of radioactive materials, and (2) the constructive use of atomic energy in biology, medicine, and public health.

The meeting of these consultants was planned by WHO some time ago but was given more urgency by a resolution adopted on 4 December by the United Nations General Assembly, which called for an international conference on the peaceful uses of atomic energy and which established an advisory committee charged with the preparation of the conference. The conference is to be held not later than August 1955, and WHO is expected to be called for consultation by the advisory committee and to participate in the conference.

The discussions of the consultant group were led by Dr. J. Bugher, Director, Division of Biology and Medicine, Atomic Energy Commission, Washington, D.C., USA. The other members of the group were Dr. A. J. Cipriani, Director, Biology Division, Atomic Energy of Canada, Ltd., Chalk River, Canada; Dr. J. F. Loutit, Director, Radio Biological Research Unit, Atomic Energy Research Establishment, Harwell, England; and Professor C. Manneback, Professor of Physics, University of Louvain, Belgium.

Yaws in Africa

Dr. C. J. Hackett, a tropical disease expert and a specialist on yaws control, has made a study tour of several countries of Africa on behalf of WHO as a preliminary step in a continent-wide plan for the control of treponematoses. The purpose of his tour, which took him from Liberia to the Belgian Congo, passing through Sierra Leone, Nigeria, and French Equatorial Africa, was to consult with the various governmental authorities and health services.

WHO is already aiding projects in Bechuanaland, Liberia, and Nigeria, and, with the co-operation of UNICEF, is contemplating further treponematoses-control operations in Africa. In addition, an international conference on the treponematoses is expected to held in Africa during 1955.

In the yaws-control programme in Nigeria, which is being aided by WHO and UNICEF, 309 502 persons had been examined in three regions of the country by the end of September 1954. About 68% of those examined (206 722 cases) had been treated, and 96 427 contacts protected, making a total of 303 149 treatments administered. An effort is being made to reach the highest possible percentage of the population in the areas where yaws is prevalent.

Thailand Sanitation Project

Recognizing the importance of the environment in child health, the Government of Thailand, working with UNICEF and WHO, is including sanitation as part of a maternal and child health demonstration and training project which is under way in Bangkok. The sanitarian assigned to the project, Mr. R. V. Coombs, is training public health personnel, particularly sanitary inspectors, and is advis-

ing the city council on problems of sanitation. By the end of March 1955, more than 180 sanitary inspectors will have received training.

Among the sanitation problems to which a solution is being sought are surface drainage, sewage disposal, and rubbish collection. Practical improvements have already been realized. Advances have also been made through a complete house-to-house inspection of the whole city, the organization of a school sanitary service, formal sanitary control of eating and drinking establishments and of itinerant vendors, and supervision of factories, workshops, and dangerous and offensive trades.

Second Asian Malaria Conference

The Second Asian Malaria Conference (Malaria Conference for the Western Pacific and South-East Asia Regions) was held in Baguio, the Philippines, from 15 to 24 November 1954. It was attended by 42 malariologists from 13 different countries.

The conference, which was sponsored by WHO with the co-operation of the Government of the Philippines, reviewed the situation with regard to malaria in the two Regions, noting that in the 23 countries and territories concerned, with a population of about 659 million persons, 276 million live in malarious areas. In 1953, 80 million persons were being protected against malaria through national and international control efforts.

It was agreed by the conference participants that the ultimate goal of nation-wide malaria-control programmes is the eradication of the disease within as short a time as possible, before any possible DDT resistance occurs. Malaria eradication has already been achieved in large areas of Ceylon and Thailand.

The conference participants devoted most of their time to the discussion of technical problems associated with malaria control; but, as at the First Asian Malaria Conference,[1] stress was also laid on the economic and social aspects of the disease and its control.

[1] See *Chron. Wld Hlth Org.*, 1954, 8, 117.

Dr. Antonio Ejercito, Director of the Malaria Control Project, Department of Health, Philippines, was elected Chairman of the conference; Dr. K. C. Liang, Director of the Taiwan Provincial Malaria Research Institute, Vice-Chairman; and Dr. S. Soeparmo, Director of the Malaria Institute of Indonesia, Rapporteur.

Following the close of the conference, a number of the participants accepted an invitation of the Government of Taiwan to visit malaria-control operations on the island. Since May 1952 a large-scale antimalaria programme has been under way in Taiwan with the assistance of WHO, which is providing the services of a malariologist, an entomologist, and a public health engineer, as well as fellowships for training of local personnel. The Foreign Operations Administration (FOA) of the USA is also assisting in this programme, through the provision of supplies and equipment.

Aid to Sudan in Control of Sleeping Sickness

WHO has signed an agreement to assist the Ministry of Health of the Sudan in efforts to combat trypanosomiasis. The Organization has been asked to send a consultant to advise the Government and is providing transport, certain supplies, and enough prophylactic drugs for 100 000 doses.

As the first step in a programme to fight the disease in the south of the country, about 30 000 persons will be given prophylaxis, in three doses administered six months apart. At the same time, active cases will be referred to health centres for treatment. It is hoped that this will lower transmission and the number of new cases, pending the institution of permanent control measures.

Health Education of the Public

WHO health educators are working in many parts of the world. In Liberia, a health education consultant, on a short-term assignment, is assisting in a survey of existing needs and local resources and in planning further

development of health education. In Egypt, two former WHO Fellows have returned to their country and are associated with the WHO-assisted Government rural demonstration and training project at Calioub, where a health educator has been working for some time. Since 1953, a health educator has been aiding the Government of Libya in improving health through education, conducting courses, particularly for young women, and working with health and education authorities and with voluntary organizations. Another health education specialist has been assigned to the All-India Institute of Hygiene and Public Health, Calcutta, to assist in giving instruction in health education of the public, in developing a field training programme in health education, and in establishing a section on health education within the Institute. In Ceylon, a public health educator has been assigned to the Department of Health Services, Colombo, to aid in the development of a country-wide health education programme. Two international health education consultants are working in the Americas—one with the WHO/PASB Zone Office in Guatemala, and the other in Paraguay. And, in the Region for the Western Pacific, an adviser in health education has been attached to the Regional Office.

During 1954, the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWAPRNE), with the assistance of WHO, trained a group of public health education workers. A health educator was assigned to UNRWAPRNE to aid in organizing and directing the training programme. Seven men and two women, selected from the refugee populations of Gaza, Jordan, Lebanon, and Syria, received six months of academic training at UNRWAPRNE headquarters, Beirut, Lebanon. In August 1954, the students were assigned individually to refugee camps in the countries from which they had been recruited to begin a six-month period of supervised field training. On the basis of the initial successful operation of this experiment in training, the Agency recruited a second group of eleven students, who began training in November 1954.

Rural Sanitation in the Americas

Among the subjects covered in reports on health conditions presented by Member States at the sixth session of the WHO Regional Committee for the Americas [2] were sanitation programmes undertaken during the period 1950-53. Included in these reports was information on water systems, sewage disposal, rural sanitation, elimination of refuse, milk and other food control, control of insect vectors of disease, and housing.

Particular attention is being given in the Americas to environmental sanitation in rural areas, and much progress has been noted.

In Brazil, extensive rural sanitation work is being carried on in the greater part of the Amazon Valley, in the valleys of the Dôce and São Francisco Rivers, and in other parts of the country. Emphasis is on improvement of water supplies, waste disposal, and housing.

In Mexico, it is estimated that more than 90% of the rural communities have primitive and inadequate sanitation. In a programme to improve rural sanitation, stress is being laid on school sanitation, with a view to making conditions in the schools, at least, better than in the community in general.

In Venezuela, in 1950, 90% of the estimated 435 000 dwellings in rural areas lacked privies or other adequate facilities for excreta disposal, and were supplied with water from contaminated or doubtful sources. The Ministry of Health and Welfare is promoting the construction of privies, and more than 70 000 have been built during the past seven years. The Government, with the assistance of the Institute of Inter-American Affairs, has completed water-supply installations for 107 communities with a total of 106 984 inhabitants.

Yellow Fever Conference in the Americas

A conference on yellow fever was called by the WHO Regional Office for the Americas in late December 1954. This conference was attended by experts from the Regional

[2] See *Chron. Wld Hlth Org.* 1954, 8, 358.

Office and by leading authorities from the US Public Health Service, the US Army, Navy, and Air Force Health Services, the Rockefeller Foundation, the Atomic Energy Commission, the US Department of State, the Gorgas Memorial Institute (Panama), and the Carlos Finlay Institute (Colombia). Its purpose was to review the present status of yellow fever in the Americas, particularly the current movement of jungle yellow fever northward through Central America, the 1954 outbreak in Trinidad (after an absence of 40 years), and unusual activity of the virus in Venezuela in the same year ; and to discuss plans for co-ordinated, long-range, epidemiological studies and control.

AREAS IN WHICH AËDES AEGYPTI IS STILL PRESENT
AREA DECLARED RECEPTIVE TO YELLOW FEVER BY U.S. PUBLIC HEALTH SERVICE
SINGLE ISOLATED HOUSE FOUND INFESTED IN TWO YEARS
AREAS IN WHICH AËDES AEGYPTI IS NO LONGER FOUND
PROGRESS OF *AËDES AEGYPTI* ERADICATION CAMPAIGN AS OF 30 OCTOBER 1954

Yellow fever appeared in Trinidad in 1954 first as a jungle disease and later in the *Aëdes-aegypti*-infested port of Port of Spain, causing economic losses amounting to many millions of dollars. This urban outbreak was the first to occur in a maritime port in the Americas in 25 years and again focused attention on the ever-present danger even in periods of lessened activity.

For the past six years, the Pan American Sanitary Bureau, WHO Regional Office for the Americas, has sponsored a continent-wide programme for the eradication of *Aëdes aegypti*, urban vector of yellow fever. All of Bolivia, Brazil, Chile, Costa Rica, Ecuador, Nicaragua, Panama, Paraguay, and Peru have been declared free of this mosquito ; and, excepting the USA, the rest of the countries of the Americas are co-operating in an effort to rid the continent of any further threat of an urban yellow fever epidemic. The progress of the campaign as of the end of October 1954 is shown on the accompanying map. The time is not far distant when, with the eradication of *aegypti* from the Americas, all possibility of urban and maritime yellow fever will have disappeared forever.

Malaria-Control Project in East Africa

WHO is assisting the East African Malaria Unit of the British East African High Commission by providing the services of an entomologist, a chemist, and two sanitarian technical officers. UNICEF is supplying transport, equipment, and insecticides.

This international assistance will enable the Malaria Unit to extend the scope of its activities, which are under the direction of Dr D. Bagster-Wilson. Emphasis will be on entomological research, in preparation for spraying with dieldrin in a project which aims to stop malaria transmission in the Paré District of Tanganyika and the Taveta Sub-District of Kenya, the combined population of which totals approximately 94 000. Investigations on the bionomics of anopheline larvae in Uganda will also be made. In addition to a study of the vectors and control through insecticides, drainage of swamps near towns in Uganda, Kenya, and Tanganyika is planned, with the technical guidance of the sanitary engineer.

Continent-wide Campaign to Eradicate Malaria

The Pan American Sanitary Bureau, WHO Regional Office for the Americas, is sponsor-

ing a continent-wide campaign to eradicate malaria from the Americas. It is hoped that the goal of eradicating the disease from the continent can be achieved in five years or less. The inter-American programme is based on recognition of the fact that eradication is possible if intensive control measures are undertaken on a large enough scale to prevent re-infection from neighbouring countries—hence the continent-wide approach.

It is estimated that there are 135 million persons living in malarious areas in the Americas, of which 60 million live in zones where the infection has been suppressed, 45 million in " protected " zones, and 30 million in unprotected zones. The object of the eradication campaign will be to eliminate the infection from the unprotected areas and thereby to prevent the re-infection of the others.

Experience acquired in countries where eradication has been achieved shows that campaigns to eliminate malaria within a definite period are less costly than programmes of continuing control. A country can claim to be free from malaria if no indigenous case of the disease is reported in three years. According to this criterion, malaria has been eradicated from five provinces of the Argentine Republic, from three provinces of Ecuador, and from all of the USA, with the possible exception of a few counties in Texas.

Review of WHO Publications

Bulletin of the World Health Organization, 1954, **11**, No. 4-5: special double number on malaria control. 382 pages. Price: £1, $3.00, or Sw. fr. 12.—. Articles in English or in French, with résumé in the other language.

At the end of the Second World War, the newly developed contact insecticides with residual action revolutionized methods of malaria control and made it possible to control the disease economically in rural areas. During the last ten years, malaria-control programmes have developed all over the world; and, as a result, the objective of WHO in this field—namely, the elimination of malaria as a public health problem—is being approached. In some countries eradication has actually been achieved; where malaria has disappeared from both man and mosquito, it has even been possible to interrupt active control measures and to replace them by a new policy of defence against the reintroduction of the disease.

Recently, a few species of malaria vectors have developed resistance to the chlorinated-hydrocarbon insecticides, and the possibility that the same phenomenon may occur in other species is an important factor which will have to be considered in future planning.

This issue of the *Bulletin of the World Health Organization* gives a cross-section of the present status of malaria control by residual insecticides—its successes, its limitations, and the problems which have recently arisen.

The first paper, by E. J. Pampana,[1] illustrates the changes that are suggested in the planning of large-scale malaria-control programmes today as compared with the past years. P. H. van Thiel & D. Metselaar contribute a preliminary report on the rather important problem of whether malaria transmitted by *Anopheles* of the *punctulatus* group can, or cannot, be controlled by residual insecticides. Papers by J. Hamon & G. Dufour, J. Sautet & R. Aldighieri, H. Floch, and C. M. J. Jaujou describe national programmes carried out in tropical and in temperate climates. L. Mara reports on a typical co-operative project between the government of a country, WHO, and

[1] See *Chron. Wld Hlth Org.*, 1954, **8**, 328.

UNICEF and illustrates the various investigations that WHO personnel carry out in projects of this kind in order to give the government concerned a clear picture of the local epidemiology and of the bionomics of the vectors in relation to climatology, so that the planning of control may be based on sound knowledge of conditions affecting the transmission of the disease in the particular area.

F. J. Dy summarizes the very valuable documentation submitted by governments in the South-East Asia and Western Pacific Regions to the First Asian Malaria Conference, held in Bangkok in September 1953.

M. A. Farid presents a report on the ineffectiveness of DDT residual spraying in the Jordan Valley. This provides a good example of how a combination of several factors can counteract the action of DDT, and it emphasizes the importance of preliminary malaria-survey work in guiding anti-malaria operations.

M.-E. Farinaud & R. Choumara and I. H. Vincke relate their experiences in the utilization of antimalaria drugs as adjuvants to residual-insecticide methods when the latter are too slow in their action upon transmission.

J. M. Andrews, Jean S. Grant & R. F. Fritz give an example of the results of interrupting residual spraying in a country where malaria had been efficiently controlled, but which was subject to an influx of infected immigrants. G. Giglioli gives a further example of how spraying operations may eventually be reduced, even in tropical areas, by adequate planning.

The last three papers in this number of the *Bulletin* deal with the development of resistance to insecticides in anopheline species. G. D. Georgopoulos relates how, in Greece, *A. sacharovi*, which had become resistant to DDT, has also been shown to have acquired a lesser susceptibility to chlordane. C. Garrett-Jones & G. Gramiccia describe their observations in two villages in Lebanon which gave very strong indications that *A. sacharovi* had developed resistance. Finally, H. Trapido states that observations in sprayed villages in Panama, where *A. albimanus* could again be found in fair numbers in sprayed houses, have shown that this species has not developed any change in physiological susceptibility to DDT and that the reduced effectiveness of the spraying may therefore be due to behaviouristic changes in the species.

Poliomyelitis (*World Health Organization: Monograph Series* No. 26), Geneva, 1955. 408 pages. Price: £2, $8.00, or Sw. fr. 24.—.

A new era in the study of poliomyelitis opened in 1949 with the discovery by Enders and his colleagues that poliovirus could be grown in tissue culture. The profound significance of this discovery has gained world-wide recognition, culminating in the award of a Nobel Prize.

Now, five years after this discovery, a great mass of new information on poliomyelitis is available, and there are real hopes of finding practical and effective means of controlling the disease.

The time has come when it seems wise to review the present situation in the light of the new knowledge, partly to make available in one volume knowledge which is scattered in hundreds of papers in many different publications, and partly, perhaps more important, to see what remains to be done before we can reasonably hope to apply successfully the control measures now under intensive development. Abundant experience in the control of other diseases has shown that the existence of a vaccine is not by itself enough, that the methods of its use may make all the difference between success and failure, and that the best method of application may differ in different epidemiological circumstances.

This WHO monograph is designed to fill these needs. Comprehensive reviews are presented of various aspects of poliomyelitis under five main headings: epidemiology,

clinical aspects, virology, immunology, and control.

The first section, on epidemiology, contains a review of present knowledge by J. R. Paul, and a study on poliomyelitis in the underdeveloped areas of the world by J. H. S. Gear. These two articles, together with a statistical study by M.-J. Freyche & J. Nielsen on the incidence of the disease and its changing age incidence since 1920, present poliomyelitis as a dynamic problem and show the direction of its evolution.

Under " clinical aspects ", R. Debré & S. Thieffry consider the symptomatology and diagnosis of poliomyelitis; W. R. Russell discusses the management of acute poliomyelitis; and H. C. A. Lassen gives detailed practical information on the management of respiratory and bulbar paralysis in poliomyelitis.

The virus of poliomyelitis is described by S. Gard. A. J. Rhodes, W. Wood, & D. Duncan consider the place of virus laboratory tests in the diagnosis of the infection. J. F. Enders, appropriately, contributes a review of the present status of tissue-culture techniques in the study of the poliomyelitis viruses.

Immunization is the only approach to the control of poliomyelitis which gives any prospect of success. It is the subject of three papers: " Immunity in poliomyelitis, with special reference to vaccination ", by A. B. Sabin; " Immunization of man with living poliomyelitis virus ", by H. Koprowski; and " Passive immunization against poliomyelitis ", by W. McD. Hammon.

Finally, A. M.-M. Payne reviews the place of public health measures in the control of poliomyelitis in the light of modern views on the epidemiology of the disease.

Like the WHO monograph on influenza, this volume on poliomyelitis assembles valuable information, by contributors of note, on an interesting and complex subject, " covering the most important aspects of recent advances, and offering a range of speculation beyond the province of the orthodox textbook ".[2]

[2] World Health Organization (1954) *Influenza: a review of current research*, Geneva (*World Health Organization: Monograph Series* No. 20), p. 8.

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